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Battle Staff Training and Synchronization in Light Infantry Battalions and Task Forces

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U.S. Army Research Institute

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This report examines issues related to battalion staff training, synchronization, and performance-measurement methodologies used to assess staff technical and tactical performance. A brief historical view of the function of staffs is presented, along with a description of existing staff training in the Army. Representative data focusing on staff functional-area effectiveness and synchronization at the combat training centers (CTCs) are presented.

The comprehensive analysis revealed clear systemic training problems in preparing officers to assume battalion staff duties, deficiencies in staff collective training and synchronization, and inconsistencies in current measurement systems in assessing command and control and staff synchronization performance.

The report offers recommendations for solutions to staff functional-area training problems and details further research in the areas of staff synchronization and performance measurement.

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The Training Research Laboratory of the U.S. Army Research Institute for the Behavioral and Social Sciences (ARI) has been conducting an active multidimensional research program to increase unit combat capabilities by identifying critical home-station determinants of performance. Initial research focused on Armor and Mechanized Infantry battalions and task forces. The program was expanded to include issues related to Light Infantry battalions, which routinely train at the Joint Readiness Training Center (JRTC) at Fort Chaffee, Arkansas.

The initial focus of the Light Infantry performance-determinants program was on training and related issues within the battalion. An area that was identified early and became the subject of continued research was battalion staff training and synchronization. Units typically did not recognize difficulties in staff technical and tactical skills areas, but the results of performance at the Combat Training Centers suggested that such problems exist. A comprehensive analysis of staff training and synchronization has led to recommendations for training program developments and innovative research designed to enhance performance-measurement methodologies for both JRTC and unit home-station applications. These recommendations support the U.S. Army Training and Doctrine Command's distributed training strategy.

This report summarizes the results of fiscal year 91 of the ARI Fort Benning Field Unit's Light Infantry Readiness Team. The applied training research was sponsored by the U.S. Army Combined Arms Command (Training) and was conducted under a Memorandum of Agreement established between ARI and the command in May 1988. The findings were briefed to the JRTC observer/controller staff in late June, to sponsor representatives in July, and to the Director, Directorate of Training and Doctrine, U.S. Army Infantry School in August 1991.

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BATTLE STAFF TRAINING AND SYNCHRONIZATION IN LIGHT INFANTRY BATTALIONS AND TASK FORCES

EXECUTIVE SUMMARY

Requirement:

In 1989, the U.S. Army Research Institute for the Behavioral and Social Sciences Fort Benning Field Unit (ARI-Benning) joined the Training Research Laboratory's Determinants of Effective Unit Performance research program. ARI-Benning conducted research that included activities such as home-station data collection and assessment of the combat training performance results of Light Infantry units. Until that time the research program did not encompass the diverse types of Light Infantry units (Light Infantry, Airborne, Air Assault, and Ranger). The program's six primary research issues--Resources, Training Management, Stability, Leadership, Cohesion, and Personnel Quality--were used to structure research activities. ARI-Benning scientists focused primarily, but not exclusively, on Training Management and Resources. As a result of the Light Infantry unit performance-determinants research, previously unidentified issues that warranted investigation emerged.

Procedure:

An analysis of battalion staff training and synchronization was conducted to summarize information generated and analyzed during fiscal year 1990-91. A comprehensive review of the literature, specific analyses of Combat Training Center (CTC) observations and data, and a survey of Infantry and Armor Officer Advanced Course classes were completed. The objective was to identify and substantiate recommendations for training program developments and future research that could bolster Army, Training and Doctrine Command (TRADOC), and troop unit-bearing strategies under constrained resource conditions.

Findings:

As TRADOC emphasizes a distributed training strategy and resources become increasingly constrained, resident training opportunities will become increasingly limited. The anticipated reductions in length of traditional institutional training programs, such as the branch Officer Advanced Courses, suggest that

other approaches are needed to provide effective training to maintain combat readiness. The research findings support training developments and focus research on the following battalion staff training and performance-measurement problem areas that emerged during the initial fiscal year 1990 research.

- Battalion staff functional area training has been generally limited to on-the-job training (OJT) and mentoring by the commander. These types of training have not proven to be effective solutions to critical training problems. Maneuver branch officers have not been systematically exposed to battalion staff preparatory training since 1974, when staff instruction was removed from advanced course programs. Between 56% (Infantry) and 63% (Armor) of company grade officers are routinely assigned to battalion staff positions before advanced course training.

- The synchronization of critical command and staff technical and tactical activities has not been consistently effective when measured at the Joint Readiness Training Center (JRTC). Unit command and staff frequently did not recognize staff deficiencies until after rotation to the CTC.

- The performance-measurement instruments used at the JRTC, which are based on Mission Training Plans (MTPs), represent the closest match of CTC measurement systems to home-station performance evaluation. Examination of data from this source did not always produce consistent or sufficiently meaningful results. Further investigation to increase the effectiveness and utility of the JRTC performance-measurement system would be beneficial.

Utilization of Findings:

This report will help the TRADOC and the U.S. Army Combined Arms Command (Training) address distributed training program-development requirements. The information presented will help the TRADOC decide what additional battalion staff training, command and staff synchronization, and enhanced performance-measurement system research would be most beneficial in supporting distributed training and combat readiness.

An immediate response to the recognized need for training will be a Battalion Staff Training Handbook, in U.S. Army Center for Army Lessons Learned Bulletin format, to provide information to company grade officers anticipating staff assignments in battalions. The handbook will present an overview of the staff, the major responsibilities of each position, and the relationships of staff functions to

one another for purposes of synchronization. This information is required before officers are assigned to staff positions and, therefore, before attending branch advanced courses. Preliminary analyses indicate that a Pre-Officer Advanced Course training phase, similar in structure to the current Phase I of the U.S. Army Combined Arms and Staff Services School, may be the most appropriate place for staff functional area training. Subsequent training that requires detailed and frequent revision because of procedural changes, such as personnel administration and logistical support, may be better suited to computer-based instruction, satellite-distributed instruction, or Asynchronous Computer Conferencing.

Current research activities are focused on improving CTC performance measurement, particularly within the command and control operating system. An infantry performance rating system is being developed using Army standard Mission Training Plans that units base their training on at home station. This effort is in cooperation with the observer/controllers from the JRTC. The JRTC personnel are providing subject-matter-expert feedback on pilot instruments that will enhance their probability of proving valid and reliable in future field tests. The current pilot instruments have behavioral statements, based on established MTP task standards, which are then anchored numerically and verbally to remove ambiguity in meaning. This rating scale approach should also increase inter-rater reliability for standardization purposes.

The JRTC Infantry Performance Rating System will be most adaptable to home-station external evaluation use. The National Training Center's instrumented ranges are not likely to be duplicated because of resource limitations. Implementation of a consistent rating system that supports unit performance assessment at both home station and at the CTCs will enhance combat readiness.

BATTLE STAFF TRAINING AND SYNCHRONIZATION IN LIGHT INFANTRY BATTALIONS AND TASK FORCES

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IN LIGHT INFANTRY BATTALIONS AND TASK FORCES

Introduction

Background

A General Officer Advisory Group (GOAG) was organized in July, 1988, to provide oversight, guidance, and support for the **US Army Research Institute Training Research Laboratory's Determinants of Effective Unit Performance program** (Lehowicz, 1988). **The first research program objective was to assess battalions' or** task force units' home station environment, preparatory activities, and training techniques used in anticipation of scheduled training rotations at one of the Combat Training Centers (CTCs). The second was to measure unit performance effectiveness at the CTCs. The US Army Combined Arms Command (Training), then the Combined Arms Training Activity, has served as the program's executive sponsor, on behalf of the US Army Training and Doctrine Command.

In 1989, the US Army Research Institute Fort Benning Field Unit (ARI-Benning) and the Leadership and Motivation Technical Area (LMTA) were assigned to the laboratory's established **Determinants of Effective Unit Performance program, which** had previously had the Presidio of Monterey Field Unit (POM) oriented toward Armor and Mechanized Infantry research. ARI-Benning was to conduct data collection and lead research activities with Light Infantry units (Light Infantry, Airborne, Air Assault, and Ranger). The research issues for the overall program also guided the development of the **Light Infantry portion of the program. The six primary issues were** Resources, Training Management, Stability, Leadership, Cohesion, and Personnel Quality. The ARI-Benning research focused initially on training management and resource issues, but emphasis was also given to the relationship of personnel quality and stability to training issues. For example, turbulence, or the lack of personnel stability, had to be considered in examining training strategies used at unit home stations. The results of the initial effort by ARI-Benning with Light Infantry units were summarized in an end of year report (Dyer, Fober, Pleban, Salter, Valentine, & Thompson, in preparation). **Among the key issues identified for further research were** battalion staff officer preparation and synchronization of combat related activities. The findings from the CTCs, more than any other source to date suggested that continued research in these areas would be beneficial to maneuver battalion combat readiness.

This report summarizes the relevant information generated and analyzed during 1990-91 to support future research recommendations for Army, TRADOC, and troop unit training strategies under constrained resource conditions. Command decisions must be made regarding battalion level staff training, command and staff synchronization, and the identification and analysis of enhanced performance

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measurement methodologies in use at the CTCs and at home stations. This report provides supporting information for such decisions. The recommendations address a variety of training developments and research activities that can be undertaken dependent upon command priorities, support, and resources. It is recommended that research continue with a US Army Training and Doctrine Command (TRADOC) school proponent to explore future distributed training strategies (The US Army Infantry School) and with the Joint Readiness Training Center (JRTC) to assess performance measurement effectiveness that can be transferred easily for home station use. An integrating Command level sponsor, the US Army Combined Arms Command-Training, CTC Directorate, should coordinate these efforts.

Problem

Of the areas investigated during the initial research phase, the following three overriding training problems emerged at the battalion level and were supported almost immediately by additional source information:

● The first was that battalion level staff functional technical and tactical training has been limited generally to on the job training (OJT). The results of a follow up survey of officer advanced course students (Thompson, 1990), which will be addressed later in greater detail, suggested that this was a systemic problem.

● The second identified problem, which was subsequently supported by parallel trends from National Training Center data, was that the synchronization of critical command and staff activities has not been consistently effective.

● The third was that differences between performance measurement methodologies and techniques used at home station and at the CTCs did not always produce consistent or sufficiently meaningful results. Subsequent reviews of recorded observations data from the CTCs suggested that examination of the CTC command and control performance measurement systems could prove beneficial.

There are currently more than 220 active and reserve component Infantry (Mechanized, Light, Airborne, Air Assault, and Ranger) battalions that frequently exercise with the more than 100 Armor (Tank, Armored Cavalry) battalion/squadrons at the US Army's CTCs. These battalions deploy with combat support and combat service support units to the combat training centers to exercise against dedicated opposition forces for two weeks at a time. The CTC environment provides the only place where some command and staff functional deficiencies become apparent. It is the stress of continuous operations and uncertain outcomes that exercise all components of a battalion task force. If the scope of the analysis and the resulting recommendations for subsequent action were limited to influencing the training and combat readiness of only the current 102 active Infantry battalions in the US Army, this

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would remain a compelling reason to support continued research. While subsequent efforts will focus on light force battalion staff training, communications, and synchronization issues (51 active duty Light Infantry battalions, as well as Special Forces A Detachments), much of what has been learned is compatible across Armor and Mechanized Infantry units with modest modifications.

Investigations in 1991 where undertaken to understand the characteristics and extent of these problems. The analysis results have helped clarify the need for systemic solutions to staff training, synchronization, and supporting performance measurement methodologies at the battalion level. The following questions were developed and have guided activities and plans for future research:

Research Issues

● Are maneuver branch staff functional area training programs and strategies adequate for the achievement of unit combat effectiveness, as measured at the CTCs?

● What are the most effective methodologies and efficient delivery systems to train staff functions and synchronization for combined arms task force combat effectiveness?

● How can CTC measurement methodologies be improved to provide representative descriptions and assessments of staff and unit technical and tactical competence?

Purpose

The purposes of this report first include documenting specific training shortcomings and describing approaches to preparing officers to assume battalion staff duties. A second purpose is to describe current and needed solutions to deficiencies in training staff synchronization. Last, analyses of data from the CTCs suggest that systemic benefits would be gained from assessing command and control performance measurement objectives and methodologies in use across the CTCs.

While a great deal of information is currently obtained from the CTCs, systemic enhancements in measurement methodology would improve feedback to units training, the proponent doctrine and training developers, and the integrating commands in refining performance trend analyses. Since battalions training at the CTCs are the lowest echelon units with assigned headquarters staffs, they afford the least complex opportunity to examine the effectiveness of training and synchronization. The Army's Airland Battle doctrine focuses on the critical role filled by the ground maneuver

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forces, the Infantry and Armor battalions and combined arms task forces, on the modern battlefield. Succinctly stated in a US Army Combined Arms and Staff Services School (CAS3) text, "Divisions are the backbone of the US Army's combat capability, and the land battle is won or lost by their maneuver battalions." (CAS3, January 1989a, p. 15).

Available data from the CTCs commonly suggest trends, rather than offering specificity regarding staff training and synchronization issues. Past observations indicate that not until a battalion or task force exercises at one of the CTCs are problems recognized. Units training at home station have greater control of exercise parameters and staffs can anticipate and prepare for events. At the CTCs, battalion commanders and staffs must respond effectively in an environment that is demanding, unfamiliar, and unforgiving. The effective management and manipulation of stressors in a continuous operations environment, along with an efficient and consistent performance measurement system, provide the greatest opportunities for the unit and the Army to train better and maintain combat readiness.

Literature Review

Historical Context

On 15 June 1775, George Washington was appointed General and Commander in Chief of the Continental forces. The Continental Congress authorized the appointment of officers to a general staff the following day, based largely on the staff structure of the British Army at that time (Hittle, 1961). Since then the structure and functions of US Army staffs, at all echelons, have been subject to reorganization to increase effectiveness and efficiency. The staff has been defined as a body of officers without command authority, appointed to assist a commanding officer (Stein, 1980), and who assist a commanding officer by the collection and analysis of information, organization of supplies and services, planning of operations (Gove, 1971).

According to current training materials, a commander's staff members and subordinate commanders are there to assist him in the direction and control of his unit's operations (CAS3, 1989b). The staff should be composed of the smallest number of qualified personnel who can accomplish the assigned tasks and each member must know his particular functional specialty in detail, as well as how that specialty relates to other staff actions. Austerity and competency therefore are basic principles for staff structuring.

Larger staffs (Theater Army, Corps, etc.) appear far more complex than might be expected if the principle of austerity is considered. In reality, a wide range of

requirements at higher echelons must be considered, and a senior commander may need a personal staff group and special staff sections to augment the coordinating staff responsible for primary functional areas (FM 101-5, 1984). In small units, defined as those organizations smaller than divisions and authorized a headquarters staff, the members may be assigned a variety of special duties in addition to their primary functional area assignments (FM 101-5, 1984). While the major responsibilities associated with each staff functional area, as well as the relationships existing between them in the operational environment are defined by doctrine, staff training and the coordinated execution of staff actions has continued to be a subject of extensive observation and study.

Staff Related Literature

Command and control research. In a recent review of Army command and control performance measurement research and methodologies, Crumley (1989) reviewed literature related to division, brigade, and battalion echelons. He found that the preponderance of research has taken place at the battalion level and from his perspective, its relevant beginning was in 1973, prior to the establishment of strong links between command and control measurement and computer aided simulations. He also judged that there was very little experimental literature available describing effective analyses of command and control performance. In 1991, an initial Defense Technical Information Center, Manpower and Training Resources Information System (MATRIS) search was conducted as part of the systematic effort to identify Brigade/Battalion Training and Staff Synchronization literature. Only three citations were listed. Two addressed the Brigade/Battalion Simulation (BBS) system being developed under TRADOC's Analysis Command. The third described computer-assisted training research intended to embed tactical planning tasks in the Armor Officers Advanced Course which was not implemented.

Training Link to Doctrine. Barber, McGrew, Steward and Andrews (1979), and Kaplan and Barber (1979) found difficulties in evaluating battalion level task performance with early versions of the Army Training and Evaluation Program (ARTEP). Recently, efforts have been made by proponent training developers to bridge training and mission task requirements with the ARTEP Mission Training Plans (MTP). The MTP for the Infantry Battalion (ARTEP 7-20-MTP, December 1988), contains guidance for planning and executing training on critical tasks to wartime standards. It links the Army's training doctrine in the 25-series manuals, primarily Training the Force (FM 25-100, November 1988) and Battle Focused Training (FM 25-101, September 1990), with "how to fight" doctrine found in The Infantry Battalion (FM 7-20, December 1984). These documents, except FM 7-20 (to be revised by 1992), are the latest mission and task performance information that is used at the battalion level. The reported continuation of unit command and control problems from the CTCs suggests that additional examination is warranted.

Olmstead, Christensen, and Lachey (1973) used data collected during battalion command and staff tactical simulation scenarios while testing a model of organizational competence, defined as an organization's capacity to cope with continuous environmental changes (Bennis, 1966). It was concluded that individual job, or task competence within an organization was a primary determinant of group effectiveness within organizations (Olmstead, et al., 1973). The staffs formed for the experiment were composed of ten 12-man groups of Vietnam-experienced Infantry officers assigned to their positions under controlled laboratory conditions. Subsequent work used 12 existing battalion command and staff groups (seven Mechanized Infantry and five Armor) as subjects and provided comparable conclusions (Olmstead, Elder, & Forsyth, 1978).

Olmstead et al. (1973, 1978) constructed an organizational effectiveness model grounded in the General Systems Theory model. An extensive body of work was reviewed, but two authors stand out for their primary contributions to the model. The organizational theory writings of Bennis (1966) suggested that an organization's competence, or health, can be measured by its ability to adapt to change, identify who and what it is, and by its ability to accurately test the reality of its environment. Olmstead et al. (1973, 1978) also drew from Schein (1965), who identified a series of sequential processes labelled the Adaptive Coping Cycle. An important determination from the field research was that when battle staff process performances were better, combat outcomes were better (Olmstead, et al., 1978). Subsequent research efforts have been related to specific simulations, or they were undertaken to assist the development of computer-based models and have been constrained by specific simulation parameters.

Even with the advantages of computer-based aids to training, such as the Army Training Battle Simulation System (ARTBASS) and BBS, which will incorporate a sophisticated tactical simulation as the operational vehicle for command and staff exercises, competency can not easily be achieved. In Battle Staff Integration, Olmstead (1990) used past validation of the organizational competence model with its two elements to support further development: (1) proficiency of all individuals in process performance, and (2) teamwork among all levels so that performance of organizational processes by individuals is fully coordinated. The model identifies necessary organizational conditions (coordination) and developmental activities (acquired skills) in order to achieve integration (Olmstead, 1990). Practical experimentation with the model in military organizations may be subject to reasonable debate, but attention must be turned to one of the fundamental components of the model, Cognitive Role Training. Cognitive Role Training, according to Olmstead (1990), involves straightforward instruction designed to inform participants about the requirements and duties of all battle staff roles. Most importantly, it provides intensive instruction about organizational competence, the organizational processes, and their performance requirements. This training is designed to provide knowledge of: (1) staff organization and functions, (2) organizational competence, (3) organizational process,

(4) the relationships between organizational competence and the processes most likely performed (and how) by staff position, and (5) staff teamwork and command expectations. In essence, the individual should be trained to perform assigned staff duties as well as know how those duties are integrated into the rest of the command and staff functions.

In a thesis proposing a five dimensional model for high performance staff development and maintenance, Speer (1984) emphasized quality individual training in staff functional areas. While each of the five dimensions of his model (leadership, training, communication, teamwork, and learning) are important, an effective staff must begin development with individual skill competency and this requires training (Speer, 1984). The results of fiscal year 1990 interviews conducted with commanders and staff officers revealed that a disproportionate number of the staff officers thought they were not prepared to fill staff positions. It was noted that on more than one occasion during return visits to units that a new officer filled a primary staff position since the previous unit (generally the S1). An awareness of the Army's stated professional development policies for officers in the first phases of their careers was considered necessary to the understanding of when and where officers received training to fill troop unit duty positions.

Battalion staff skill training. There has been a recent proliferation of articles in popular military professional journals focusing on such command and staff topics as: Tactical Operations Center activities (Harback, 1990), battalion S1 training (Mason, 1990), intelligence planning (Galvagno & Rock, 1990), as well as more global command and control considerations (Bolger, 1990; Burkett, 1990). It is reasonable to view the publication of these articles as a method to get needed information to the field. While the articles published in Military Review usually address issues at echelons above battalion and brigade, a review of the publication's annual indexes from 1985 forward showed that relevant command and control topics had been published every year.

The US Army Command and General Staff College trains officers to serve on division or higher level staffs, initially through the CAS3. There is however, no systematic staff functional area training available for the maneuver branch officer before filling battalion level positions. Battalion and brigade staff functional area training was deleted from the Programs of Instruction (POI) of the officer advanced courses in 1974 (H.W. Crawford, personal communication, 13 February 1991). Specialized courses were available for officers enroute to staff duty assignments after advance course completion. Those assigned to S1 positions were to attend training at the Adjutant General School, Fort Benjamin Harrison, Indiana, and for those expecting to fill S4 positions, training would take place at the Quartermaster School, Fort Lee, Virginia. Information gathered during fiscal year 1990 determinants research led to further inquiries regarding the actual utility of this training strategy and will be presented later.

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A comment in a White Paper prepared by experienced National Training Center Observer Controllers addressed what is apparently a fairly common concern and perception of many observers (Fish, Stephenson, & Sisco, 1989):

> The ideal staff in the ideal army should be able to take a commander's concept, interpret it, conduct planning and integrate the seven operating systems into a cohesive plan. But, how well prepared are the members of the task force staffs to synchronize the critical elements of combat power? Have they the schooling or background to play their proper role?

Officer professional development and utilization. The Department of the Army Pamphlet 600-3 (DA Pam 600-3, 29 August 1989) describes the first phase of professional development. Officers learn their overall branch functions and missions in their basic course programs and they receive technical instruction to build branch related skills (DA Pam 600-3, 29 August 1989). Each officer's first assignment is supposed to provide the opportunity to apply the training and to develop leadership skills in a troop unit while the lieutenant serves primarily as a platoon leader.

As captains in the second of five professional development phases, most officers remain assigned within their branch and some receive special functional area assignments. Assignments might include Reserve Officer Training Corps duty, liaison, or foreign area training, but not S1/S4 training. Most captains attend their own branch officer advanced course where instruction includes branch specific modules, staff operations, administration and logistics, counterinsurgency, tactics, and force integration (DA Pam 600-3, 29 August 1989). The general description of the advanced course program further states that each officer should continue a personal education program that will enhance professional career development. In some cases this might mean specific (staff) functional area training, but the emphasis during the first seven to eight years of service is on branch proficiency.

Staff synchronization. Olmstead indicated that evidence has been mounting that maximum effectiveness could be achieved only when a battle staff directly addresses the quality of its organizational functioning and develops capabilities that enable it to maintain functional integrity under battlefield stress and pressures (Olmstead, 1990). In Battle Staff Integration, Olmstead (1990) states, ". . .it is clear that the competence of an organization to cope with its environments depends upon effective performance of each organizational process both separately and in combination."

A general review of Army doctrinal literature has not provided broad support or numerous references for battle staff integration. Crawford and Hensler (1990), and others use the term integration in conjunction with staff activities, but not necessary in

the same context as does Olmstead. However, there is very consistent doctrinal support for command and staff synchronization. The capstone war fighting manual, Operations, FM 100-5 (May 1986), presents synchronization (along with initiative, agility, and depth) as one of the four basic tenets of the Airland Battle Doctrine. As defined:

> Synchronization is the arrangement of battlefield activities in time, space and purpose to produce maximum relative combat power at the decisive point. Synchronization is both a process and a result. Commanders synchronize activities; they thereby produce synchronized operations.

According to Operations (FM 100-5, May 1986), synchronization may and usually does require explicit coordination among the various units and activities participating in any operation. It further states that in battle, when communications fail and face-to-face coordination is not possible, related implicit coordination may make the difference between victory and defeat.

The chain of operational doctrine, from Army level (FM 100-5, May 1986) to company team (FM 71-1, November 1988) has consistently emphasized synchronization as a tenet of the Airland Battle. Corps Operations (FM 100-15, September, 1989) structures activities into seven groups, or battlefield operating systems, which must be synchronized. The division commander must coordinate operating systems and synchronize their activities in time, space, and (operational) purpose as stated in Division Operations (FM 71-100, November 1988). The requirement for staff synchronization is stated clearly in FM 71-3, Armored and Mechanized Brigade Operations (May 1988) where command, or vertical synchronization, and horizontal synchronization among staff sections are distinctly identified. Task force functions are grouped into seven battlefield operating systems and need coordinated efforts by the commander and staff to integrate these systems into a combined arms force tailored to meet situational requirements (FM 71-2, June 1988). In Tank and Mechanized Infantry Company Team (FM 71-1, November 1988), synchronization of actions in time and space to produce maximum relative combat power at the decisive point requires teamwork. The selected manuals reflect the emphasis on synchronization of ground maneuver units. Parallel references to the importance of synchronization may be found in combat support and combat service support doctrine as well (FM 5-100, November 1988; FM 6-20, May 1988; FM 63-2, November 1983; FM 100-103, October 1987).

The Light Infantry doctrine is not currently as stable as that of the armor and mechanized forces for reference purposes. For example, the latest edition of The Infantry Battalion (Infantry, Airborne and Air Assault), FM 7-20, is expected to be published in December, 1991. Doctrinal consistencies are expected across light and heavy forces with the reduction in numbers of field manual series. The emphasis on

combined arms operations, inherent to Airland Battle doctrine, and the need for standard terminology support these changes. While a strong and consistent doctrinal base has been established by the Army, effective models for training and implementing synchronization have been absent until recently.

Crain (1989) provided a rationale for an applied synchronization process for command decisions through the examination of the relationships of Airland Battle doctrine, established planning processes, commanders critical information requirements, and staff responsibilities. Crain's Planning Flow Diagram, the Battle Staff Guide, presented information in a manner that could portray parallel processes and time constrained decision points to aid activity synchronization (1989). A separate thesis, Synchronization of Combat Power at the Task Force Level: Defining a Planning Methodology, was completed at approximately the same time and now serves as a course reference for the Tactical Commanders' Development Course (TCDC) (Long, 1989). The TCDC trains brigade and battalion command designees to teach synchronization to their staffs and subordinate commanders.

CTC findings suggest that a variety of problems exist with battalion level staff technical and tactical training and synchronization. Recent research findings from Light Infantry observations (Dyer, et al., in press) corroborate a broad range of subject matter expert observations and analyses common to both light and heavy forces (Crawford & Hensler, 1990; McDaniel, 1990; Seibert, 1990). It is not suggested that all factors contributing to observed staff shortcomings are identical for both light and heavy battalions. However, it is obvious from a review of the doctrinal literature that the majority of the planning and preparation tasks are common to all ground maneuver battalions and, therefore, there is commonality in many core staff issues.

Current Research Activities

The general procedures used to assess of battalion level staff training and synchronization have included literature reviews, unit observations, and performance data reviews. No large experimental effort was undertaken; however, consistent existing deficiencies emerged for both Light Infantry and mixed light/heavy force (Light/Mechanized/Armor) staffs. This analysis has supported recommendations to improve staff functional area skills, synchronization and performance measurement that will enhance Army combat readiness at battalion and task force level.

Literature and CTC performance reviews. The literature review provided the foundation for exploration of staff training and synchronization requirements. As Light Infantry unit performance results from 1990 became available they were compared with unit personnel perceptions of those performances. There were limited

opportunities for statistical analyses because of the small sample size (six battalions) rotating to the two CTCs. Emphasis was placed on examining data from additional rotations from the JRTC because the performance measurement system used at JRTC is closely matched to Infantry training doctrine.

Current training philosophy and practices. Since the literature has shown the need for staff functional area skill training and initial research results indicated deficiencies in this area (Dyer, et al., in press), it was critical to learn where such training exists. A brief survey was conducted with officer advanced course students to determine training and experience levels. The results were compared with the stated Army officer professional development policy and guidelines (DA PAM 600-3, 1989). Current officer basic and advanced courses programs of instruction were examined for staff functional area content. Subsequent to this inquiry, course developers for personnel and administration (S1) programs from the US Army Adjutant General School, and logistics management (S4) programs from the US Army Quartermaster School were contacted to determine the general availability of such programs for use by officers assigned to maneuver battalions.

Combat Training Center (CTC) Performance

Light Infantry Performance Determinants Results

Light Infantry determinants research, fiscal year 1990. Battalion-sized units selected for training at either the National Training Center (NTC) or the JRTC were visited approximately three to four months prior to the rotation. Questionnaires were administered, training and personnel records were obtained, and a limited number of interviews were completed to establish baseline data. Observations of unit field training took place with selected units during the train up periods prior to rotation. The PRE rotation visit which occurred two weeks before the CTC rotation was used to determine the quantity and relative quality of unit preparations made for the training rotation. During the rotation Observer/Controller (O/C) ratings were obtained for staff, company, and platoon mission performance. POST rotation visits were made to the units to again complete questionnaires and to conduct interviews assessing the lessons learned from the CTC experience (Dyer, et al., in press). More comprehensive performance data was expected to be available from the archives to support subsequent analyses.

The battalion staff was not initially identified as one of the primary areas of concern. As a result, the majority of the data collection and analyses during the year focused on line company and platoon training issues. However, interviews, observations, CTC After Action Reviews (AARs), and Take Home Packages (THPs),

suggested that some staff weaknesses existed. The results and findings from the performance determinants effort, presented in Dyer et al. (in preparation), primarily focused on company and platoon analyses since they provided the greatest opportunity for correlative analysis. Additional information from questionnaires and interviews was obtained that proved more relevant to battalion command and staff discussion.

Baseline information and both PRE and POST rotation questionnaires were completed by command and staff personnel from five of six battalions. However, in some cases staff officers and company commanders changed between observation periods. It was not uncommon for continuity from baseline data through PRE and POST rotation data collection points to be broken for both command and staff positions. The total number of questionnaires completed, by battalion, are shown in Table 1, representing the opinions of the officers assigned at the time. Continuity from PRE to POST is not suggested.

Table 1   Questionnaire Responses by Battalion

| | Battalion | | | | | | |
	A	B	C	D	E	F*	Total
PRE N =	20	16	19	19	19	0	93
POST N =	14	18	16	20	19	22	109

* Only POST rotation questionnaires and interviews were obtained from this battalion.

The results of data from the six Light Infantry battalions followed during Fiscal Year 90 revealed very limited continuity of key command and staff officers at battalion level (complete data was available from only five battalions). The Mean time a given command group consisting of Commander, Executive Officer, and S3 served together was 4.6 months (Range: 0-10 months). Officers in each of these positions had served an average of 13.3 months (Range: 6-20 months). Personnel administration (S1) and logistics (S4) staff position turnover was more frequent.

Little information was obtained that specifically related to prior staff expertise and training since identifying staff training shortcomings had not emerged earlier as an issue. However, staff responses to questions which related the importance of home station training exercises to unit combat readiness fell into two categories. Drills, field exercises, and even battalion external evaluations (of company and lower echelon performance) were perceived to be most important, while staff and leader training

events were rated as the least important. There were some inconsistencies regarding perceived training frequency requirements for leader training (MAPEX, TEWT, CPX), but quarterly training emerged as the most common recommendation (Dyer, et al., in press). Staff members seldom expressed a need to attend battle simulations (e.g., ARTBASS) on a frequent basis. This was true for base line through POST rotation questionnaire responses. The illustrated relative importance of training responses from Dyer, et al. (in press) is shown in Figure 1.

```
            MAPEX
               |   CPX                        CALFEX
               |   &              XEVAL   |     FTX
        SIM    |   TEWT   EDRE      |  STX |   LFM   DRILL
          |    |   |        |       |   |  | |   |   |
  _____|____|___|_____|_____|___|__|_|___|___|_____
  1                                                              11
  Low <----------------------------------------------------------> High
                              Importance
```
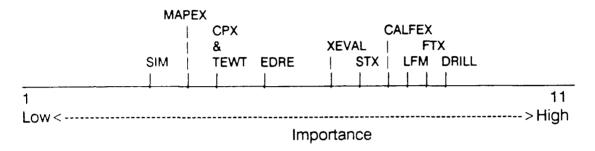
Figure 1. Perceived importance of training events to combat readiness: Mean ranks over all units (Scale ranges from 1 to 11). (Dyer, et al., in press).

Though immediate O/C feedback was available only from three JRTC rotations, it was clear that battalion staffs were viewed as having difficulty planning, preparing, and executing operations. Subsequent reviews of detailed AARs and THPs substantiated the observer's feedback.

The responses from staff members in the post-rotation questionnaires and interviews provided more useful responses to command and staff questions. The commanders and staff officers generally agreed with O/C comments that staff functional areas required training and coordination. The opinion was expressed that Command Post Exercises and other activities did not exercise or stress the unit's entire command and control system sufficiently to identify weaknesses before the CTC rotation. At this point, staff problems could be generally categorized as either individual staff skill weaknesses or coordination (synchronization) problems.

Individual staff functional weaknesses. The S1 position in the battalions observed either had a lieutenant serving or a captain in transition waiting either to accept a company command or to leave the battalion (Dyer, et al., in press). The rationale frequently offered was that the S1 NCO could handle most of the personnel administration responsibilities. The difficulties found in this area appear to support the need for S1 training as Mason suggests (1990). The new Battle Staff NCO Course, at

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the Sergeants Major Academy (Cochran, 1991) may help build expertise within each of the staff sections discussed, but it does not address the reported absence of training needed by officers filling S1 positions. There was a reported lack of recognition by units of the importance of the S1 staff section in planning, preparing, and executing operational missions.

The Infantry battalion S2s are Military Intelligence branch officers who are trained to perform as intelligence analysts. One of the shortcomings identified during interviews was that the unit's S2 would attempt to do the work of the entire staff section if the (Infantry) NCOs were not well trained. In some cases the S2's assessments were not given much credence because they were very junior in grade and had limited experience. Observations from the CTCs confirmed the presence of performance difficulties in the S2 Sections. Observers noted poor Intelligence Preparation of the Battlefield (IPB) and intelligence utilization by the operations staff as difficulties. A recently published IPB focused article substantiated the need for information and supported inclusive command and staff training to overcome IPB performance decrements (Galvagno & Rock, 1990).

While it is true that the Infantry battalion S2s are Military Intelligence branch officers who are specifically trained to perform intelligence activities, clear weaknesses in the S2 educational process have been noted (Manki, 1990). The major problem, according to Manki (1990), is that the military educational system teaches functions over substance. It assumes that the soldiers will learn the intricacies of their jobs through unit on-the-job training programs. Manki argues that it is the school's responsibility to teach the soldiers what they need to know to prepare them for their environment. Specifically, intelligence officers must be trained and educated to develop and evaluate priority intelligence requirements for the maneuver battalion. The doctrine and its very existence often remain a mystery for most intelligence officers (Manki, 1990).

The logistics support for a Light Infantry battalion requires very careful planning due to limited organic transportation. Problems with load prioritization, quantities of necessary items, and a lack of formal training contributed to the problems faced by battalion S4s. The staff officers interviewed indicated that the majority of the training they had received took the form of on the job training (OJT). There was usually a mixture of pride in having accomplished as much as they had while recognizing that they lacked critical skills and experience. The majority of the S4s were aware that logistics management training existed, and that it was usually available as an on-site course at the post level. Few were able to attend because units either did not want to spare the training time, or the commander was concerned that a trained officer would be transferred to a brigade or division staff rather than returned to the unit. This is supported by the limited attendance in the Quartermaster School's S4 classes by maneuver branch officers. A total of 60 spaces are allocated in two classes annually.

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Synchronization of staff functions. The battalion staff members who completed questionnaires and were interviewed prior to their CTC rotations generally felt that they received adequate time to train as a staff and with Combat Support and Combat Service Support slice elements. After the rotations these same staff members expressed more concern with the infrequency with which they had trained. This was particularly true with engineer, aviation, and fire support elements. It was typical across battalions that respondents only realized the existence of shortcomings in staff preparation after their CTC rotations. This suggests that the CTC continuous operations environment, which was not under the control of the brigades or battalions, was needed to reveal the true status of staff technical and tactical training and synchronization.

Responses to a POST rotation question that asked what weaknesses were identified referred to specific training shortcomings, primarily at platoon and company level. However, staff officers from three of the six battalions (only POST rotation data was available from the sixth battalion) identified areas which suggested weaknesses in staff synchronization. Five respondents from two different battalions thought they needed additional staff planning experience and command and staff exercises (i.e., MAPEX, CPX). Three thought additional training with their brigade slice support elements was needed. This last response was amplified in the area of personnel administration and logistics coordination. Additional field exercises were considered necessary by 24 respondents to coordinate medical evacuation alone. Many individual responses addressed the need for combat service support coordination in one of the supply classes, but three respondents stated the specific need to exercise the battalion with complete Combat Support and Combat Service Support slice elements run by the brigade. They indicated in interviews that most command post or field exercises failed to place adequate demands on the system over an extended period of time to truly train staff synchronization.

In addition to O/C feedback, respondents from five battalions identified staff synchronization weaknesses. They specified S2 and S3 coordination, the IPB process (S2 activity), orders, violation of planning time rules, and the movement of aid stations without command notification as examples. Respondents from two battalions identified clear, simple, and timely statements of Commander's intent as important. It must be noted that the majority of the positive comments came from one battalion's respondents. This battalion had the most recent combat experience and seemed to be better prepared for the CTC based on O/C performance ratings. Respondents from two battalions identified rehearsals as critical strengths in their units. A recent Center for Army Lessons Learned (CALL) newsletter addressed the importance of proper rehearsals, stating, "The chance of achieving synchronization without rehearsal, especially in units which have the degree of personnel turbulence experienced in the U.S. Army, is low." (CALL 91-1, April 1991).

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The responses to a request for post CTC reflections that might benefit other units produced staff related comments. Staff planning and synchronization were considered critical by five respondents from three battalions. Six comments from five battalions stated that battalions must train with slice elements and with those particular assets they will have with them during the CTC rotation. In addition, the support elements must be familiar with the battalion's Standard Operating Procedures (SOPs), fire support plans (both direct and indirect), and execution must be coordinated with the maneuver operation, and logistics (including support CSS) must be practiced during all field training.

The battalion command and staff performance results are of limited use if they are considered alone. The CTC environment may be the only place in which staff training and synchronization deficiencies can be observed, which limits performance data collection opportunities. So other summaries were examined for comparison, some from single rotations, and others representing performance trend reviews.

Related Combat Training Center Findings

Center for Army Lessons Learned (CALL). In 1986, the US Army Combined Arms Command (then the Combined Arms Training Activity) began publishing a series of newsletters and bulletins, summarizing lessons learned from the NTC, and later using lessons learned from all the CTCs. A short story format was used by CALL (CALL 90-6, 1990) to illustrate the 18 defensive and 19 offensive tasks considered by the commandants of the Infantry and Armor Centers to be critical to synchronization at that echelon. Additional topical bulletins and related materials have been published to provide the Army with comprehensive summaries of Doctrinal, Training, Materiel, Organizational, and Leadership (DTMOL) lessons from deployments for use in operational planning and preparation (CALL, 90-9, 1990), and to provide immediate information to units participating in current operations (CALL, 90-7, 1990).

Light (and mixed) Infantry rotation observations. Among the most helpful, and comprehensive CTC reviews available is a US Army War College Study Project, prepared by Crawford and Hensler (1990). Then LTC Wayne Crawford had been the Senior Observer/Controller (SO/C) at the JRTC and then LTC Robert Hensler had been a rotational battalion commander. Crawford and Hensler reviewed 11 JRTC battalion THPs, the 11 related SO/C training observations, and three quarterly observer controller training observation summary packets which were used to report periodic observations to the CALL, Fort Leavenworth (1990). Wells (1989) included observations from nine prior NTC Heavy/Light force mix rotations in his summary of the first Light/Heavy rotation at the JRTC. McDaniel (1990) reported on the findings of an Infantry School team he led to observe the operations of a Light/Heavy rotation at the NTC. The Directorate of Evaluations and Standardization (DOES), US Army Infantry School (Seibert, 1990), reviewed six JRTC rotations that had similar

characteristics to those reviewed by Crawford and Hensler. While these and other analyses generally appear to reflect the personal observations and perspectives of the authors, and are based on limited samples, they prove to be rich in detail.

Crawford and Hensler (1990) formatted their presentation according to the seven Battlefield Operating Systems (BOSs) outlined in FM 25-100 (1986), which are used to structure unit performance feedback at the JRTC. Staff training and synchronization comments were found not only in the Command and Control BOS, but across all BOSs. McDaniel (1990) structured his summary by DTMOL, then by BOS, with emphasis on Command and Control, and on Combat Service Support. He found systemic problems in staff operations in the Command and Control BOS. He also found that support liaison officers and teams required training to operate with maneuver branch units. Crawford and Hensler found that information flow during planning, preparation, and execution was deficient. Many supporting staff elements, especially the Fire Support Officer (FSO) and the engineer, did not integrate their plans with the battalion staff maneuver plan. DOES indicated a similar finding in five of six battalions examined (Seibert, 1990). Wells (1989) described even more pronounced support synchronization difficulties when light and heavy forces were combined.

Crawford and Hensler (1990) and DOES (Seibert, 1990) found consistent staff coordination difficulties with fire support planning. This usually meant that the FSO neglected to develop target support for the ground tactical plan or scheme of maneuver, or key intelligence indicators for necessary target suppression were missed. Crawford and Hensler found that fire support and engineering matrices were the most commonly used structures to support battle planning, preparation, and execution and half of the battalions and 60% of the companies had problems either constructing or using such matrices. McDaniel (1990) indicated that integration of fires had to be well planned, suggesting that from his observations they were not.

Crawford and Hensler (1990) found that nine of the eleven rotations they examined had an Air Defense Officer (ADO) on special staff, but of those six experienced significant problems. Incomplete information and communications during staff planning contributed to the problems. In general, the ADOs were found to be weak in detailed coordination with maneuver staffs and with light force tactics. The maneuver staffs failed to fully understand the command and coordinating relationship between themselves and supporting Air Defense units. Wells found similar problems during observations of light/heavy combined arms forces (1989). McDaniel (1990) commented that common terms and graphic symbols must be learned to ensure proper planning, preparation, and execution by combined arms and services forces.

Every opportunity must be taken to integrate Combat Service Support (CSS) operations into home station training to gain a full appreciation for its impact on tactical operations (Crawford & Hensler, 1990). This comment clearly confirms those expressed by officers responding to more recent CTC experiences. The clear need

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for better, more detailed mission estimates by both the S1 and the S4 were identified. Many of the related AARs revealed that more detailed casualty collection and evacuation plans (S1) and resupply plans (S4) were needed. Personnel accountability was not well executed during field operations and only three of the eleven battalions had maintained accurate accountability. Replacement operations were generally considered inadequate. Transportation, which is scarce in a Light Infantry battalion, requires extensive planning to obtain maximum utility from available vehicles. Few battalions were able to plan and coordinate sufficiently to meet the situational demands of the CTCs. Such problems are not automatically solved by mixing light and heavy forces (Wells, 1989). McDaniel (1990) pointed out that CSS represented the greatest area requiring doctrinal, training (coordination and synchronization), and organizational improvements.

Fully 60% of the battalions and companies examined by Crawford and Hensler (1990) had significant difficulty planning for tactical operations. A quarter of the battalions reviewed did not develop a scheme of maneuver or articulate a concept of the operation for subordinates. A similar percentage did not manage time effectively and did not establish work priorities. Two thirds had difficulty in preparing and issuing orders. In general, battalions had stressed squad and platoon training at home station to the exclusion of multi-echelon training and the practice of the staff process. On the positive side, units that had practiced the staff process had also effectively used SOI s during deliberate and compressed planning periods (Crawford & Hensler, 1990; McDaniel, 1990; Seibert, 1990; Wells, 1989).

JRTC Command and Control Task Analyses. In 1991, command and control task data from eight recent JRTC rotations were extracted from the CTC archive. These eight rotations showed the greatest degree of continuity across tasks and systematic performance measurement. While the performance measurement system in use at JRTC was based on the standard Infantry Mission Training Plans (DA, ARTEP 7-20-MTP, 1988), it has required modification through exercise experience. The performance rating system uses a Go/No Go rating for missions and Trained, Needs Practice, Untrained (TPU) scheme for tasks.

An examination of the eight rotations revealed critical shortcomings in the data recording process as well as the anticipated problems with command and staff task performance. The data record structure has been designed to accommodate all possible subtasks, so tasks with fewer subtasks were found to have responses recorded that exceeded the number of actual data points. Specifically, reviewers could not always distinguish whether a task, or related subtask, was performed or if it was performed but not subsequently recorded by the observer. That is, it was not clear whether missing values in the data corresponded to tasks and subtasks rated or if they were attributable to absent ratings. For example, a review of O/C responses revealed that "Did Not Observe" entries were used frequently when there were actually no corresponding subtasks available for comment. Similarly, under tasks considered

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Table 2   Battalion Staff Functional Area Weakness Trends*

(Rotations)	Crawford & Hensler (11)	ARI Benning (6)	Wells (1)	McDaniel (1)	DOES (6)
S1 - Personnel Accountaoiity/ Evacuation	X	X			
S2 - IPB Integration	X	X	X	X	X
S3 - TOC Ops, Execution	X	X	X		X
S4 - Resupply, Transportation, CSS Coordination	X	X	X	X	X
SLICE CS - FSO, Engineer, Avn, ADO	X	X	X	X	X
Synchronization of Planning & Prep	X	X	X	X	X

*This summary of observations and data analyses is not considered comprehensive but rather illustrative of the consistency in identification of staff deficiencies.

trained or untrained, many supporting subtasks were left blank. This raises a question that can not currently be answered regarding the quality and relative value of these subtasks. It also calls into question the quality and value of the performance measurement system for anything other than immediate feedback to the rotational unit. Comparative examinations across a larger sample of twenty rotations indicate that company and platoon level tasks were recorded more frequently than command and control ones were for the battalion or task force.

Ten tasks were extracted from command and control, primary staff functions, and related slice element performance assessments. Table 3, Command and Control Task Status, summarizes three key tasks. It shows that task observations rated as trained (T), remain consistently low (21%, 15%, 21%). Each unit completed various

missions during a given rotation, but not always the same ones as other units, so some differences in frequency of similar tasks completed can be expected. What Tables 3, 4, and 5 do not reveal is how many times the tasks were actually performed nor why data was missing in some cases.

It is possible that all subtasks were not observed, hence reporting of missing data under the category, "Did not observe", is appropriate. However, in some instances, TPU data has been recorded for subtasks that are not part of the related task, and in others no rating or explanation has been provided where one is required. It must be noted that errors in data recording could occur at any point in the processing of the T&EO data, not just during observations.

Crumley (1989) noted that O/Cs in settings similar to the JRTC typically complete their ratings at the end of missions and not as the tasks are being observed. As a consequence, the data entries or ratings may very well be influenced by the overall outcome of the mission, i.e., halo error, rather than specific unit behaviors relevant to accomplishing an assigned task. Crumley (1989) has taken the position that an individual who has been tasked to observe and control simultaneously, such as O/Cs at JRTC, can not effectively accomplish both duties at once. Discussions with O/Cs have revealed that they will accomplish assigned tasks according to established priorities and to the extent that they are trained to do so.

The overriding issue, missing data notwithstanding, is that the units were observed to either require practice or they were untrained on the clear majority of the command and control and related staff synchronization tasks.

Table 3   Command and Control Task Status

TASK 600:	Develop & Communicate A Plan Based on the Mission (Battalion)					
21 Cases	Status:*	T=4	P=4	U=11	2+	Missing
		21%	21%	58%	9%+	Missing
TASK 602:	Prepare for Combat Operation (Battalion)					
19 Cases	Status:	T=3	P=4	U=12	None	Missing
		15%	22%	63%		
TASK 603:	Command and Control Operations					
19 Cases	Status:	T=4	P=2	U=13	None	Missing
		21%	11%	68%	None	Missing

* T = Trained, P = Needs Practice, U = Untrained (% by TPU)
\+ Number and percentage of total missing cases (Not included in TPU% breakdown)

Table 4 presents three selected tasks associated with the battalion staff to illustrate identified problems. The small percentage of observations rated as trained for these three tasks representing the performance of the battalions' S1, S2, and S4 sections is startling. However, they provide support for battalion level research and training development efforts since staffs are not functioning well in simulated combat environments.

Table 4   Primary Battalion Staff Performance

TASK 452:	Perform Personnel Actions				
10 Cases	Status:*	T=0	P=3	U=3	4+ Missing
		0%	50%	50%	40%+ Missing

TASK 1100:	Establish Priority Intel Requirements (PIR) & Intel Requirements (IR)				
22 Cases	Status:	T=1	P=6	U=4	11+ Missing
		9%	55%	36%	50%+ Missing

TASK 453:	Perform Logistical Support				
10 Cases	Status:	T=0	P=6	U=0	4+ Missing
			100%		40%+ Missing

* T=Trained, P=Needs Practice, U=Untrained (% by T, P, U)
+ Number and percentage of total missing cases (Not included in TPU% breakdown)

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Table 5 depicts a sample of the recorded performance of the selected slice elements from the eight rotations. Once again the results are not very encouraging.

Table 5   Slice Element Performance

TASK 626: 23 Cases	Plan, Develop, and Communicate a Tentative and Final Task Force Fire Support Plan (Battalion)				
	Status:*	T=0	P=9	U=13	1+ Missing
		0%	41%	59%	4%+ Missing
TASK 627: 22 Cases	Prepare Initial Fire Support Plan SPT of Maneuver Plan				
	Status:	T=0	P=7	U=15	None Missing
		0%	32%	68%	None Missing
TASK 750: 23 Cases	Plan Maneuver/Countermaneuver/Security Operations				
	Status:	T=1	P=5	U=17	None Missing
		4%	22%	74%	None Missing
TASK 1025: 31 Cases	Develop and Communicate a Combat Service Support Plan				
	Status:	T=6	P=15	U=5	5+ Missing
		19%	58%	23%	16%+ Missing

* T = Trained, P = Needs Practice, U = Untrained (% by T, P, U)
+ Number and percentage of total missing cases (Not included in TPU% breakdown)

Current JRTC trends. The first quarter 1991 trend summary from the JRTC noted improvements in briefbacks and rehearsals for operations, better Fire Support Officer participation in course of action development (planning), increased awareness by S2s of scout capabilities, and improved medical evacuation plans. The trends suggested that the following areas required improvement which continued to substantiate the reviews and analyses detailed above:

a. Command and Control Weaknesses - There was a lack of Fire Support (plan) integration (into the scheme of maneuver), a lack of combat power synchronization, weak Tactical Operations Center activity management, poor use of planning and preparation time, and lack of integrated staff planning.

b. Fire Support Weaknesses - Targeting processes were weak and maneuver commanders did not participate in fire support (planning) activities.

c. Aviation (CS) Weaknesses - The S3 Air was not familiar with air-ground operations, air planning SOPs must be developed, air liaison must aggressively seek detailed ground tactical planning information and coordinate with the maneuver staff. Aviation must learn Infantry doctrine.

d. Intelligence (S2) Weaknesses - The S2 section must constantly update and post intelligence, they must communicate with the commander early in the planning cycle and during the battle. The S2 must "make things happen" versus waiting for someone to provide intelligence. The scouts must deploy early.

e. Weaknesses in Staff Synchronization - Staff planning weaknesses limited Civil Affairs and Psychological Operations use, CSS overlays and planning need improvement and coordination with the maneuver plan.

Current Training Programs

Military Qualification Standards Program (MQS)

Common and branch specific tasks that are expected to be mastered by company grade officers as part of their professional development are presented in the Military Qualification Standards II Manual of Common Tasks (STP 21-II-MQS, 27 March 1987). According to the US Army Center for Army Leadership (CAL), this manual is under revision, supplementary branch specific manuals are being prepared by proponents, and both forms are expected to be published during 1991 (CAL, 1990).

In a recent Infantry article prepared by the CAL, the MQS was described as providing a framework for school commandants, unit commanders, and individual officers to use for common and branch specific officer training, education, and professional development (CAL, Nov-Dec 1990). The MQS system has been designed to provide the link between institutional training and operational assignments. STP 21-II-MQS (March 1987) does provide a limited list of administrative, logistic, and maintenance tasks which company grade officers are expected to master. It also presents an appendix of "Officers' Special Emphasis Areas", which are typical additional duties. However, the MQS system does not provide sufficient information to prepare officers to fill battalion staff positions. A review of the Military Qualification Standards I Manual (STP 145-I-MQS, September 1986), which presents the pre-commissioning requirements for cadets and officer candidates, revealed no reference to staff skills or training. Neither MQS I or II publications provided task lists extensive enough to be considered sufficient preparation for battalion staff assignment.

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Additional information was gathered during the OAC survey regarding the perceived helpfulness of the Military Qualification Standards (MQS) program in performing company and battalion duties (N=229). Table 6 summarizes responses from the sub-sample indicating familiarity with MQS (N=139) to use and helpfulness with performing battalion assignments. Of the 180 Infantry and Armor branch officers surveyed within the total sample, only 63.8 percent (115/180) were familiar with MQS II, and only 45.2 percent (52/180) had used it in previous assignments. Of those Infantry and Armor officers training with MQS in previous unit assignments, only 62 percent (31/50) thought it helped their performance at company level, and only 48.1 percent (13/27) felt that MQS II helped their performance at battalion staff level. The total useable sample of officers from all branches attending the Infantry and Armor advanced course (N= 229) revealed slightly greater MQS familiarity, but in general, it was used less (see Table 7).

Table 6   MQS Use and Perceived Helpfulness in Battalion Staff Assignment

MQS
Helped Performance at Battalion Level

		Yes	No	No Response	Total
MQS Used	Yes	16 (42.1%)	15 (39.5%)	7 (18.4%)	38 (27.3%)
	No	0 (0%)	9 (8.9%)	92 (91.1%)	101 (72.7%)
		16 (11.5%)	24 (17.3%)	99 (71.2%)	139 (100%)

Table 7   Relationship Between MQS Familiarity and MQS Use

MQS Used

		Yes	No	No Response	Total
MQS Familiarity	Yes	72 (48.0%)	78 (52.0%)	0 (0%)	150 (65.5%)
	No	1 (1.3%)	75 (94.9%)	3 (3.8%)	79 (34.5%)
		73 (31.9%)	153 (66.8%)	3 (1.3%)	229 (100%)

Infantry and Armor Programs of Instruction (POIs)

The objectives and contents of current resident maneuver branch officer basic and advanced courses were examined to determine the time dedicated to training lieutenants and captains for battalion staff duties.

Officer basic courses. The primary objectives of both the Infantry and Armor Officer Basic Courses (OBCs) are to qualify Second Lieutenants with necessary respective branch technical and administrative skills and to train them to lead and fight their platoons. According to current POIs, OBC students receive administration, intelligence, operations, and maintenance training related primarily to their duties at platoon level within the context of company/team tactical operations (AOBC POI, 30 January 1991; IOBC POI, 25 February 1991). Core Combined Arms subjects include between 35 and 44 hours of instruction in Engineer, Artillery, and Chemical operational familiarization. Maintenance and related support training varies in proportion to the quantity and complexity of equipment the lieutenant will manage. Appropriately, no administrative, training management, or logistics and maintenance tasks have been included to prepare new lieutenants to assume battalion staff duties because they are not supposed to be assigned to staff positions, they are to lead platoons.

Officer advanced courses. The Infantry and Armor Advanced Courses (OACs) are designed to train senior First Lieutenants and Captains, usually between their fourth and sixth years of service to command companies, or teams, and to serve as battalion S3s (Operations Officers) or brigade assistant S3s. The curriculums and current POIs are oriented to meet these objectives (AOAC 3-91 class schedule,

15 January 1991; IOAC POI, 27 February 1991). Officers are taught to command and fight their companies or teams. They are also taught to train, maintain, and sustain their companies or teams and to write battalion/brigade operations orders. To successfully complete the last objective, they receive instruction in the communicative arts, the Intelligence Preparation of the Battlefield (IPB), as well as related Combat Support and Combat Service Support activities. These subjects augment core tactical operations instructions. Sufficient time is not available to train battalion personnel administration (S1) or logistics and maintenance (S4) duties. The results of a survey (Thompson, 1990) of Infantry and Armor OAC classes suggest that even if such instruction were part of the POIs, many officers have already filled these staff positions. Table 8 shows that a relatively large number of officers are trained annually in the ground maneuver branch programs. Many are expected to fill important staff positions without having received formal staff training.

Table 8   Officer Basic and Advanced Courses

	IOBC	AOBC	IOAC	AOAC
Current Course Length	16 Weeks 15.6 Weeks (FY 92)		20 Weeks 18 Weeks (FY 92)	
Annual Student Load	2,156	991	895	460
(classes)	(11)	(4)	(5)	(4)
Staff Training	No	No	Bn S3 Bde A-S3	Bn S3 Bde A-S3

IOAC staff preparation and experience survey results. A survey (Thompson, 1990)[1] of Armor and Infantry Officer Advanced Course (AOAC & IOAC) classes was used to assess company grade officer perceptions of battalion level staff training and relevant experience. The survey was conducted in fiscal year 1991 and the results were reported immediately in a memorandum to the US Army Combined Arms Command's Deputy Commander for Training (Thompson, 1990). A total of 65 AOAC

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[1] Thompson, T.J., Pleban, R.J., Valentine, P.J., & Thompson, G.D., designed, administered, analyzed, and summarized the information reported by Thompson in memorandum form. CPT (P) D.J. Litavec, of the ARI Fort Leavenworth Field Unit, provided assistance with question topics based on experience with the Combined Services Staff School curriculum.

and 168 IOAC officers attending classes at the time responded. Table 9 presents the number and percentage of respondents attending their own branch course and of those, the ones who had previously held principal battalion staff positions.

By the time officers attended the advanced course, the majority had already filled a battalion or squadron staff position (AOAC 63%, IOAC 56%). From the total sample, very few received any training to prepare them for staff duties (AOAC 15.2%, IOAC 18.7%). Of the Armor and Infantry branch officers who actually served in staff positions, less than half felt adequately prepared to assume their positions (AOAC 46.4%, IOAC 45.3%). Those officers with staff experience and some form of preparation determined that mentoring by a boss, the commander, and unit field training (FTXs) were the most effective training they had received in preparation for staff duty. However, only 25 percent of the AOAC officers and 33 percent of the IOAC officers with staff experience felt that even these two choices adequately prepared them to perform staff duties. Table 9 summarizes the survey sample categories.

The results of this survey revealed that the majority of officers serving in staff positions at the battalion level were learning through OJT and mentoring under demanding circumstances. They were not confident in the adequacy of this preparation. This perception has been supported by the recurrent observations from the CTCs that staffs lack the necessary skills and the ability to conduct and synchronize battle planning, preparation, and execution.

Table 9   AOAC and IOAC Staff Training and Experience

	Armor	Infantry
Total (N)	65	168
Branch Officers	46 (70.8%)	134 (79.8%)
In branch with staff experience prior to OAC	29 (63.04%)	75 (55.97%)
Had Adequate Training for staff experience	14 of 29 (48%)	34 of 75 (45%)

Staff functional area training. The maneuver branch advanced courses were initially reduced in length from nine to six months in 1974. A large portion of the curriculum deleted including training battalion staff functional area duties (H.W. Crawford, personal communication, 13 February 1991). The rationale that made removal of staff training blocks of instruction acceptable, according to institutional memory, was the plan to provide courses at the Adjutant General and Quartermaster schools for those officers expected to fill assignments in S1 and S4 staff functional areas (Stephens, 1990). The intent was that rather than providing training in each staff area for all Infantry and Armor OAC officers it would be more efficient, and resource effective, to send officers who would be assigned as S1s and S4s to a staff course enroute to their units.

Administrative and Logistics Training

Adjutant General School. Changes were made to the Adjutant General and Quartermaster Schools' programs after 1974 to accommodate increased maneuver branch officer attendance. However, specific courses were subsequently developed to meet specific maneuver branch requirements (Stephens, 1990). An effective five week resident S1 course was completed in 1980, after a 1978 General Officer Committee identified systemic S1 staff problems. Routine advances were made in the resident S1 POI by the Adjutant General School and Soldier Support Center (US Army AGS, April 1986; April 1989) as well as parallel correspondence courses. However, the S1 course was discontinued almost two years ago due to resource constraints. The non-resident course which was linked to resident instruction has been discontinued as well. Personnel at the Adjutant General School have indicated that a new correspondence POI is planned (Stephens, 1990). The POIs have clearly provided the necessary information and training to prepare officers to fill personnel administration positions at battalion and brigade. Some of the course work also appears to have required instructor and student interaction for optimum benefit, so Soldier Support Center training developers have been addressing the problems inherent with supporting interactive training models under TRADOC's guidance to emphasize distributed training.

Logistics training. Courses appropriate for logistics training remain active. The US Army Quartermaster School, at Fort Lee, Virginia, and the US Army Armor School, at Fort Knox, Kentucky, support S4 and Battalion Maintenance Officer staff requirements. The Quartermaster School has a separate four week resident POI for battalion S4s, but as stated earlier, only 60 students can be accommodated annually. Maintenance and Logistics Management Courses are also available for on-site training (Mobile Training Team), sponsored by the US Army Logistics Management College and the Quartermaster School (Stephens, 1990). The availability of these two to four week courses is usually through post or division sponsored programs. Interview responses obtained from commanders in fiscal year 1990 revealed a consistent

hesitancy to send officers to these courses. There were concerns expressed that once trained, the officer would be transferred to brigade, division, or post assignments rather than being returned to the battalion. It was also mentioned that the availability of on post training would conflict with field exercises or would be too near the time officers were scheduled for reassignment.

Correspondence training options. Officers can receive skill training through the Army Correspondence Course Program Catalog (DA Pam 351-20, August 1989). Observations and interviews completed during 1990 indicated that company grade officers are seldom afforded time to assess their educational requirements related to the responsibilities of staff positions. In addition, there is little evidence to suggest that relatively inexperienced officers could be expected to know what information and training they needed to perform staff duties effectively.

Officer Assignment Guidelines

Officer career assignment patterns, professional development, and associated training requirements are specified in DA Pamphlet 600-3, Commissioned Officer Professional Development and Utilization, dated 29 August, 1989. This publication presents branch and general career patterns and the appropriate relationships of training and assignments by career fields. All officers are expected to be competent in MQS I skills (DA STP 145-I-MQS, 1986) prior to the completion of the branch basic courses where these skills are commonly tested. Maneuver branch advanced courses prepare officers for company command and to fill assistant S3 duty positions, but neither the officer basic nor advanced courses provide preparation for S1 or S4 assignments (See Figure 2, below).

Department of the Army Pamphlet 600-3 (1989) outlines an ideal description of early officer career progression. Observations, interviews, and feedback from OAC officers (Thompson, 1990) clearly showed that this is neither a realistic nor an accurate portrayal of actual career development. Figure 2., below, presents a comparison of the assignment and training guidelines described in DA Pamphlet 600-3 (1989) with the results of the 1990 OAC survey. DA 600-3 (1989) states that in the first of five officer professional development phases the basic course provides overall branch mission and functions and detailed technical instruction related to branch associated skills.

Assignments   Appearance in Career Development

Assignment	I	1	2	3	4	5	6	7	8	9
Battalion S3							(X)	X	X	X
Battalion S1/S4					(X)	X	X	X		
Company Command				(X)+	(X)	X	X			
Asst S3					(X)	(X)	X	X	X	
Asst S1/S4		(X)	(X)	X						
Company XO		(X)	(X)	X						
Scouts, Mortar, Support Platoon	X	X	X							
Platoon Leader	X									
Years	I	1	2	3	4	5	6	7	8	9
Rank	2LT		1LT		CPT*	CPT		MAJ*		MAJ
Training	OBC				(OAC	)CAS3 I	CAS3			C&GSC

X = Career Assignment by DA PAM 600-3
(X) = Actual Assignment pattern

Note: * Indicates earliest opportunity for promotion
       + 1LTs have commonly commanded in Initial Entry Training environments

Figure 2. Planned and actual early career development.

Current Training Interventions

Tactical Commanders' Development Course. The importance of staff training
and synchronization was emphasized by BG John E. Miller, the Deputy Commandant
of the US Army Command and General Staff College, stated: "Your staff won't win the
war for you, but it can prevent you from winning," to emphasize the importance of staff
synchronization and training in his opening remarks to a TCDC class (4 February
1991).

The Tactical Commanders' Development Course (TCDC) was designed to train
battalion and brigade commanders to synchronize the battlefield operating systems
and to apply tactical doctrine in offensive and defensive operations and to focus on

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the "how to" of synchronization while planning, preparing, and executing missions. Doctrinal components and the Synchronization Matrix (Long, 1989) are used extensively during the planning and preparation phases. It is frequently after using the synchronization matrix to accomplish staff planning and preparation work themselves that the officers realize what their staffs are expected to do. Execution takes place using the JANUS computer-based tactical simulation. TCDC and proponent schools are expanding the use of JANUS, primarily to train battalion and company commanders.

Battle Staff NCO Course. Parallel training is conducted in the new Battle Staff Noncommissioned Officer (NCO) Course, at the US Army Sergeants Major Academy. The course is designed to teach individual staff section skills and the coordination, or synchronization of staff functions (Cochran, 1991). A primary course objective is to teach the successful coordination of all staff section functions during a three-day battle scenario. Formerly, a Personnel and Logistics Course, designed for S1 and S4 NCOs, and a 10-week Operations and Intelligence Course to train S2 and S3 NCOs existed separately. These were combined and full staff coordination was added during the play of the battle scenario. NCOs were given the opportunity to learn the functions of all sections as well as build and exercise their own skills using the Battalion Brigade Simulation system (Cochran, 1991).

The TCDC and Battle Staff NCO Courses have been well received and appear to help staff synchronization. However, staff officers without a strong foundation of functional area knowledge and experience remain weak links under stressful conditions. Battalion commanders are learning to synchronize activities through participation in the TCDC, but they are familiar only with the post 1974 OAC training strategy. The typical commanders do not know what they are asking their staffs to accomplish because they have not been properly trained, nor have they had a full range of staff experiences.

Discussion

Training Deficiencies

Absence of staff training. The survey results of OAC students from the Infantry and Armor Centers (Thompson, 1990) substantiated the historical perspective of "lost" battalion staff training in 1974 (Stephens, 1990). The S1 course at the Adjutant General School, and specific S4 logistics and maintenance programs at the Quartermaster and Ordnance Schools were intended to train not only those branch officers, but they were to fill the 1974 gap in formal training for maneuver branch officers filling battalion staff positions.

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Mason (1990) subtitled his Army Trainer article addressing S1 training, ". . .the cancellation of the battalion-level S1 course signaled demise of any formal training course for the S1." He prepared his article to fill part of the void and he presented an action plan to train a new S1 during the first four weeks in the assignment. Mason took the position that appropriate formal training will not again be offered and he has provided the new S1 with "tasks" to be completed during the first four weeks of the staff assignment. Expected outcomes have been identified that would enable the officer to learn and perform the adjutant's duties adequately without much outside assistance. It must be noted that the outlined activities may be rigorous and time consuming, particularly in view of the typical battalion S1's schedule. In addition, Mason did not suggest that his recommendations replaced effective formal training.

Galvagno and Rock (1990) have addressed the need for Infantry officers to understand intelligence requirements in low intensity conflict operations. They indicated that while a battalion S2 has training and material to support intelligence gathering operations against some insurgent forces, experience in Operation JUST CAUSE, in 1989, revealed shortcomings in the system. The fact that the article appeared in Infantry magazine suggests that a broader understanding is needed of the intelligence process at battalion level. Staff officers, to include the S2, apparently have not been fully prepared to provide timely and well-formatted information for the commander (Manki, 1990).

Common Failure to Recognize Deficiencies

Battalion commanders and staff officers from units observed during fiscal year 1990 did not feel that leader and staff training exercises (MAPEX, TEWT, CPX, ARTBASS) were important, nor did they think it was necessary to conduct these exercises frequently. They did recognize the importance of frequent small unit training, such as drills and situational exercises (Dyer, et al., in press). This is an interesting perspective, particularly after having numerous staff shortcomings noted by O/Cs at the CTCs. This suggests that battalion commanders and staff officers lack the perception necessary to assess their true condition because they have not had sufficient training and experience to know what they must do to operate effectively. As the OAC surveys revealed, most training received by new staff officers has come in the form of OJT. Crisis management is the norm. Training programs to develop technically and tactically proficient battalion staff officers do not exist.

The initial observations and feedback from garrison training and field exercises during 1990 did not reveal command and staff concerns about staff functional area performance. Problems began to emerge only under the simulated combat conditions found at the CTCs. There units must truly plan, prepare, and execute using combat multipliers as they would in combat operations. The requirements include staff actions and synchronization of command and staff functions under harsh time and resource

constraints. Under these conditions a unit's commander and staff can not control the scenario to compensate for deficiencies in staff knowledge and skill. They experience problems that were never identified during home station training. Observations of units during continuous operations in realistic environments, such as the CTCs, may be the only place where commanders and staff are sufficiently taxed to reveal flaws in training.

The resulting knowledge that staff training and synchronization needs improvement has seldom been of much benefit to the unit. Knowledge that could be transferred to improve home station training is commonly lost. Units observed in 1990 had significant changes in command and staff assignments after the CTC rotation. It is it is reasonable to assume that the commander and staff officer learned from the experience. However, the knowledge gained may be unique to the situation and incomplete since the experience does not reflect any systemic or intentional learning.

At times CTC observations raise questions of perspective or bias. However, staff training and synchronization problems have been clearly identified and effectively described. They require systemic innovations to solve them and to enhance home station staff training and improve combat readiness.

The Performance Measurement System

Observer experience. A related, and possibly more difficult area for training developers to address is the consistency, quality, and effectiveness of the measurement system used at the CTCs to assess unit and staff performance. The JRTC relies primarily on O/Cs who are well trained and gain experience through multiple rotation observations. The O/Cs are themselves products of the same limited staff training system and therefore require rigorous preparation to perform their duties. Nowhere in current training programs can a junior officer, either in a unit or as an O/C, become expert with the responsibilities of each battalion staff position as well as comprehend the relationships between them. In that the JRTC O/Cs live with the unit during the rotation, duty as an O/C is as rigorous and fatiguing as being a member of the unit. The number of annual rotations puts stress on the O/Cs. Limited time between rotations also limits the ability of the Operations Group to train O/Cs.

The units observed in 1990 reported long hours of planning, and preparation prior to mission execution. Missions were followed by AARs which required participation by unit leaders and O/Cs. Subsequent mission orders were issued and leaders and O/Cs began the process again with little rest time. Soldiers within squads and platoons indicated that they were frequently able to rest and prepare between missions, but it was not uncommon to hear leaders say that they received little sleep during their rotation. The latter apparently held true for the O/Cs as well.

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The necessity for rest and sleep during continuous operations has been recognized and emphasized (Moloff, 1990). Current research findings (Pleban, Valentine, Penetar, Redmond, & Belenky, 1990) have shown that soldiers in continuous operations who do not receive recuperative sleep become more irritable, anxious, and fatigued over time. An earlier field experiment, conducted by Pleban, Thomas, and Thompson (1985), showed that sleep loss degraded the performance of many critical cognitive tasks. FM 22-9 <u>Soldier Performance in Continuous Operations</u> (1983) is under revision. Appendix A of the current edition addresses performance decrements that result from sleep loss. What has not been explored is the extent to which instructor and O/C performance is affected by stressors. Rating errors, biases, attention and vigilance deficits are an anticipated outcome of excess stress in trainers and observers. Earlier analyses (Thompson, 1989) and the continuous operations field research noted above (Pleban, et al., 1985; Pleban, et al., 1990) did not examine instructor performance (i.e., ratings, evaluations) as a moderator of training effectiveness.

Summary and Conclusions

Summary

The maneuver battalions are central elements to Airland Battle doctrine (FM 100-5, 1986). The majority of this force is comprised of more than 220 Infantry battalions, with 102 active component Light and Mechanized battalions. Half of the active Infantry component (51 battalions) is made up of Light Infantry, Airborne, Air Assault, and Ranger units with an additional 15 light reserve units. These units receive some of their most effective training at the JRTC. Performance measurement at the JRTC is based on doctrine (Mission Training Plans) and Mission Essential Tasks Lists which are specific to the rotational units. Additional light forces, such as Special Forces, exercise at the JRTC as well. The findings from Light Infantry focused training research with the variety of light forces using the JRTC can be generalized to benefit the total force.

The transient nature of battalion staff assignments, the relatively short periods of continuity officers have on a battalion staff, the reduction of formal staff training (Mason, 1990), and the lack of compliance with officer utilization and development policies (DA PAM 600-3, 1989) have resulted in severe staff training and synchronization problems. Documented observations of unit performance from the CTCs (Crawford, 1990; Fish, Stephenson, & Sisco, 1989; Wells, 1989), as well as the practical signals provided by the establishment of the TCDC and the Battle Staff NCO Courses clearly confirm this assessment.

Current training. DA 600-3 (1989) states that during the first career phase, the basic course provides instruction related to the overall mission and functions of an officer's branch along with technical instruction that provides the detailed knowledge and required skills associated with the branch. Examination of the current MQS II revealed no introductory tasks that provided even basic knowledge and comprehension of staff functions. The first staff training objective (S3 Operations) for Infantry and Armor officers is identified in the Advanced Course programs. No evidence of staff functional area training exists for officers in the maneuver branches during the branch oriented phases of their professional development.

The CAS3 prepares officers for staff positions above brigade level. Specific resident S1/S4 training for maneuver branch officers filling battalion staff assignments seldom takes place. The two most common forms of training received by officers in Infantry and Armor battalions are OJT and mentoring, neither of which are perceived as very effective (Thompson, 1990). The absence of formal or structured staff training has not been identified as a problem by battalion commanders and staffs until after the unit has trained at a CTC. The time constraints, fatigue, and lack of skill and experience stresses the primary staff members beyond their abilities. They can not compensate for lack of individual job knowledge and their collective inability to synchronize actions in a continuous operations environment. Current training exercises at home station, apparently no matter how rigorous, do not provide the conditions that consistently identify staff performance deficiencies.

Staff synchronization and integration. The TCDC and the Battalion Staff NCO Course have are aimed at the improvement of enhance staff synchronization. While effective, they do not compensate for the deficiencies in staff functional area training. The maneuver battalion's own staff officers lack branch doctrinal knowledge as do other branch officers (S2, Fire Support Officer, Engineer). These deficiencies in individual knowledge detract from the collective ability of the staff to synchronize activities.

Efficacy of staff integration experimentation. Olmstead's (1990) compelling call for demonstrative experimentation to support his battle staff integration theory is probably premature because the basic staff skill conditions do not exist to support it.

The Cognitive Role Training requirement in Olmstead's model (1990) can not be met under present conditions because it assumes that officers will receive at least familiarization training in all staff areas. They do not. The model Olmstead outlines in Battle Staff Integration (1990), requires organizational competence, consisting of: (1) the proficiency of all individuals in their own process performance, and (2) teamwork across all levels so that the performances by individuals are fully coordinated.

The first part of the model is conceptually similar to task training and realistic job previews discussed by Pleban, Thompson, Valentine, Dewey, Allentoff, &

Wesolowski (1988) and Premack and Wanous (1985). However, instruction in primary staff roles for maneuver branch officers ended in 1974. Few officers, though not in any systematic manner, have been exposed to either administrative staff training, or logistics and maintenance training only.

The second critical requirement for battle staff integration, according to Olmstead (1990), is teamwork, which requires sufficient staff stability for members to learn each other's strengths and weaknesses. The limited continuity of key staff members serving together (4.6 months) observed in typical Light Infantry forces during 1990 are counter to the model's fundamental conditions.

The conditions do not exist in the US Army to test the efficacy of Olmstead's Battle Staff Integration model. In addition, the doctrinal imperative is on staff synchronization (FM 100-5, 1986) which is not completely analogous to Olmstead's theoretical position on staff integration.

Few maneuver battalion commanders have been exposed to battalion level staff training because they are post-1974 advanced course graduates. Commanders have probably served in at least one primary staff position prior to S3 Operations, but not likely in both S1 and S4 positions. What they know about the other staff functions is based on their earlier observations while learning their own responsibilities. They learned how to get things accomplished, but not necessarily with an objective view of the entire staff process. Later, while attending the Command and General Staff College, a different perspective on staff work is gained, but this is not from the perspective of the battalion. The earlier lessons received while "under fire" in a unit are logically the first lessons, or insights, passed on to new staff officers by the battalion commander.

The training received by officers attending the Infantry and Armor basic courses annually represents a significant influence on the Army's maneuver battalions. If current experience can be used to predict future practices, the majority of these officers can expect to fill primary staff positions prior to attending their advanced courses. It is therefore reasonable to identify a way to train these officers for potential staff assignments.

Performance measurement. The CTC observers, whether at the JRTC, CMTC, or NTC could acquire a great deal of information and comprehension of unit performance by using standard MTP based measurement methodologies. Whether the O/C can accurately assess the dynamics of command and control activities, particularly those that have a larger proportion of cognitive components rather than more easily observable behavioral objectives is an open issue. Sufficient O/C training time and clarification of task priorities are also issues. The stressors on O/Cs during field observation and exercise control may be similar to those felt by unit members. Comments from unit leaders and relevant past research (Pleban, et al., 1990;

Thompson, 1989) suggests that quantifying the effects of such stressors on O/C's abilities to perform effectively, and examining other performance measurement system components would prove beneficial to Army training and unit readiness.

Conclusions

Guidelines and constraints. The underlying considerations and assumed constraints that influenced this work meet the guidelines established by TRADOC in the Army Training 21 integrated training strategy (TRADOC, October 1989; TRADOC, November 1990; TRADOC, Final Draft, April 1990). In summary, TRADOC has emphasized a strategy that calls for the integration of institutional and unit training plans as well as a shift from residential to distributed instruction. This strategy has been articulated in the 1991 coordinating draft changes to TRADOC Pamphlet 350-4 from the 1987 version of the document (TRADOC, 1987; TRADOC, Final Draft, 1991). However, examination of TRADOC proponent resident instruction must be considered as one of the options for training since it frequently offers the opportunity to achieve the highest cognitive learning objectives and can accommodate rapid curriculum revisions (Bloom, 1956; Thorn, 1990).

Constrained resources are expected to remain a significant consideration for every training recommendation. For example, it is unlikely that complex instrumented performance measurement systems, similar to the NTC, will be proliferated throughout the Army. Multiple Integrated Laser Engagement System (MILES) and well trained O/Cs will remain the most common performance assessment strategy at home station. Emphasis must therefore be placed on enhancing the performance measurement system.

Research Issues Revisited

Are maneuver branch staff functional area training programs and strategies adequate for unit combat effectiveness as measured at the CTCs? The results reported in Tables 3, 4, and 5 and from the OAC survey indicated that measurable problems are commonly found in battalion and task force staff performance, but are not usually identified during home station training. The conditions and training resource limitations at home station may not allow sufficiently rigorous continuous operations training to expose existing staff functional shortcomings. Reviews of branch course programs of instruction and the results of officer advanced course student surveys indicated that there is no systematic staff functional area training, nor is there a clear strategy for developing appropriate training.

What are the most effective methodologies and efficient delivery systems to train staff functions and synchronization for combined arms task force combat effectiveness? What remains missing is a strategy to teach basic staff skills that must precede synchronization of command and staff actions. Initial knowledge and comprehensive training objectives can be presented effectively using a paper based delivery format prior to officers attending OAC. It would be better to teach more detailed technical subjects in resident courses, or through interactive computer based instruction. This may be an issue that can be addressed in detail by training development specialists. What is clear is that the training should precede any assignment to battalion staff. This means that unless assignment patterns change, training must be provided before the OAC.

How can CTC measurement methodologies be improved to provide representative descriptions and assessments of staff technical and tactical competence? It is possible that the current performance measurement systems at the CTCs cannot adequately identify all command and control and staff technical and tactical problems and translate them for the rotational units. Enhancing the CTC command and control performance measurement system would provide benefits to Army training and combat readiness. Refined data collection objectives and procedures at the CTCs would yield meaningful insights into how battalion command systems function under stressful conditions. The work load and established priorities at the JRTC, as well as at the other CTCs, limit the training and recovery time available to O/Cs. These issues certainly influence the effectiveness of O/C assessments and feedback to units.

Recommendations

Pre-Staff Assignment Training

The first objective is to provide useful training to the officer (or NCO) before he or she has a staff assignment. This means that training must occur during the first career phase, or early in the second one, while the officer is a lieutenant or captain (3-5 years of service).

The second objective is to use the most effective and efficient delivery system. TRADOC's Army Training 21 guidelines emphasize increased distributed training across the next decade. The anticipated reduction in the size of the Army could once again make residential instruction a viable approach to solving part of the problem.

Early and albeit limited, observations and feedback from participants in the Tactical Commanders' Development Course suggest that an effective program has

been developed to teach operational synchronization to commanders (Lussier & Litavec, 1990). An article in Soldiers suggests similar training gains can be achieved by NCOs working in staff sections (Cochran, 1991). The initial focus of training research and development should be on staff fundamentals since these are prerequisites to synchronization.

Until officer assignment practices (Thompson, 1990) and professional development and utilization policies are aligned (DA PAM 600-3, 1989), it is essential to provide training materials to officers at the most convenient career point after the branch basic courses and prior to staff assignments. The results of observations and interviews during 1990 suggested that once an officer has been assigned to a troop unit it is unlikely that he would be sent to a resident logistics course for training. On-site logistics and maintenance management courses are available, but course training may conflict with field exercises, the officer may be scheduled to move into a company command too soon to be beneficial to the staff section, or the officer may have had sufficient time in the battalion to appear attractive for assignment to a higher echelon staff element once trained. For these reasons the approximate 3,000 annual Infantry and Armor Basic Course graduates could be provided available staff functional area reference materials once assigned to troop units. These materials would provide information to lieutenants during their transition from platoon leadership to assistant staff positions.

Immediate Interventions for Staff functional area training. An immediate response to the need for training will be a paper based overview of battalion staff functional areas with a reference list for each position. The principles from documents such as TC 12-17, Adjutants Call: The S1 Handbook (Coordinating Draft, April 1991), FM 6-20, Fire Support in Combined Arms Operations (31 December 1984), and FM 10-14-11, Commander's Handbook for Property Accountability at Unit Level (2 November 1984) will be used to describe the general duties and responsibilities of staff officers. The product, a Staff Training Handbook, in the form of a Call Bulletin, will provide sufficient information to the user to learn what the staff functional areas are, how they relate to one another, and how to synchronize supporting staff plans for tactical operations.

Necessary Training Developments

Delivery formats. Proponent schools could use the available material to incorporate battle staff training into a branch sponsored MQS System addendum if this system gains broader acceptance (See Table 8). However, this approach, as well as the immediate emphasis on paper based training materials (TRADOC, November 1990) generally limits the cognitive level of the learning objectives to knowledge and comprehension (Bloom, 1956). Conventional wisdom suggests that correspondence training encounters tremendous resistance, particularly from lieutenants assigned to

units who do not see an immediate need for the training. While TRADOC has adopted a distributed training strategy, it will be effective only if it meets proponent, unit, and the individual's identified needs.

Initially, general staff training needs can be met with limited technology. Detailed and changing requirements will force training developers to consider more sophisticated methodologies. Adaptation of training materials to Interactive Video Disk (IVD) technology would permit higher cognitive level objectives (Application and Analysis) to be achieved in training. While not necessarily as demanding or potentially comprehensive as resident instruction, the IVD technology economically bridges a gap between paper correspondence and classroom training. This technology is readily available in the Army's Electronic Information Delivery System (EIDS). It's drawback is that content material updates require new disk development. This may not be the best format for subjects requiring frequent updates. Computer Based Instruction provides some additional flexibility in that content changes can be programmed and transmitted to users either on floppy disks, or by direct electronic transmission.

Asynchronous Computer Conferencing, which is perhaps the most sophisticated distributed training system currently available, has been developed and modeled using the Engineer OAC (Phelps, 1987). This system may prove too costly for many routine applications today; however it offers a format for achieving the highest cognitive levels of educational objectives (Synthesis and Evaluation) through an electronic mail media which could be relatively economical for specific programs. This delivery methodology has the potential to exceed resident training effectiveness because the subject matter expert, or best instructor, could be identified to address advanced subjects with consistency.

A distribution strategy using a range of technologies for individual and unit home station training could allow users to schedule training conveniently. However, the role of resident instruction should be reevaluated as one of the options to be considered in terms of relative training effectiveness.

Performance compliance. Establishing a "gate" for staff training programs as a firm branch advanced course prerequisite would ensure distributed training program completion. This would be similar to completion requirements for CAS3 Phase I, the correspondence prerequisite to the resident CAS3 course. The gate would provide maximum benefit if it preceded any staff assignment. The unit commander, knowing that his officers require time to train before staff assignments, and to meet professional development gates, could best determine program scheduling.

Research opportunities. The addition of resident course hours for S1 and S4 training in the advanced courses might be beneficial, but this solution remains unlikely. Near term and longitudinal analyses could assess the effectiveness of distributed training strategies by the Infantry proponent. The range of available delivery systems,

from conventional paper-based to various computer based training and conferencing systems (Hahn, Harbour, Wells, Schurman, & Daveline, 1990; Thorn, 1990)) must be assessed to determine the optimum training value for the user.

CTC Performance Measurement Research

Infantry performance measurement issues. A number of performance measurement issues have emerged from the battle staff training and synchronization research. The use of T&EOs by O/Cs at the JRTC is the CTC measurement system which most closely emulates what occurs during external evaluations at unit home stations. However, even when a brigade commander conducts an external evaluation of a subordinate battalion using O/Cs and the MTP in accordance with FM 25-100 (1990), assessments of CTC data reveals that shortcomings go undiscovered. An analysis of select command and control tasks from the JRTC showed that the total system does not capture and effectively describe problems in all cases.

While automated simulations, like the Army's Simulations Network system (SIMNET) offer extraordinary opportunities for enhancing and validating complex procedural and unit task training (Hiller, 1988), they can not be expected to supplant all dismounted Infantry training and they do not assess staff planning and preparation skills. Performance measurement systems must match the training environment and be tailored to the unit's needs. Furthermore, proliferation of sophisticated instrumentation, similar to that found at NTC is unlikely in the face of anticipated resource constraints.

Combat outcome: MTP based effectiveness. The performance measurement system in place at the JRTC has used T&EOs, but they have been given a low priority compared to the Take Home Packages and are not always completed, nor are they always accurate. Current evidence suggests that shortcomings exist, at least in command and control and staff synchronization and in its measurement. Enhancing centralized O/C training or developing alternative training procedures with JRTC O/Cs and (MTP) training development subject matter experts at the US Army Infantry School and Center is critical to simplifying and achieving improved performance measurement for JRTC and home station use.

Maintaining Objective Rating Schemes. There is evidence that objective performance rating systems, such as the current MTPs, are an effective means to translate performance observations into useful feedback (Latham & Wexley, 1982). Behavioral anchored rating scales have been used in assessment programs to support training selection decisions as well as to provide meaningful feedback to program candidates (Pleban, Thompson, & Allentoff, 1988). Similar objective rating developments could be incorporated into current measurement models to achieve

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more comprehensive mission oriented performance measurement (Crain, 1990). If properly constructed and validated, a performance rating system could provide the following critical benefits to augment the MTPs and the O/C generated Take Home Packages:

● CTC observer workloads could be eased. Descriptive anchors would ease the O/C cognitive workload and allow them to focus more directly on critical incident comments. Fewer, or more evenly spaced rotations each year would free time for better O/C training, preparation, and review.

● Properly and simply automated input of observer comments would shorten the time required to provide rotational units with descriptive performance feedback. Augmentation to the data entry procedures could reduce entry errors occurring after O/C tasks have been completed.

● Maneuver battalion (Infantry) home station O/C training and unit performance assessment could be simplified by using the same performance rating system.

● Archived data cross referencing could be simplified to provide user friendly information processing. Military analysts could use behavioral anchored quantitative data to conduct multidimensional analyses (e.g., performance by Battlefield Operating System, by DTMOL, by type of unit) for training development. Such a system would allow more subjective judgements without loosing objective rating benefits.

Infantry Performance Rating System (IPRS). The development of an IPRS, or graphic rating based on standard MTP behavioral anchored (task standards) is considered important. The rating system is envisioned as being both numerically and verbally anchored to remove rating ambiguity and to increase inter-rater reliability.

O/C performance effectiveness. The CTC O/Cs, particularly at JRTC, are exposed to the same environmental stressors as the rotational units they support. Past theoretical (Thompson, 1989) and applied (Pleban, et al., 1990) research make a case for assessing the contributions of stress to decrements in performance measurement quality. Sleep loss, fatigue, and early predisposition to response sets in evaluations influence performance measurement. The nature and influence of physiological and psychological stress factors on the quality of assessment can now be monitored, measured, and quantified (Redmond & Hegge, 1985). While the literature on stress, fatigue, sleep loss, etc., is reasonably complete, the impact of these factors on trainer (O/C) performance under extended training environmental conditions is not. The benefits to be derived from research into duty and environmental stressors include:

● Increased quality of the O/Cs contribution to the training system.

● A reduction in the immediate and chronic physiological and psychological effects of stress on the O/Cs which include long term health risks and "Job burnout".

● Practical applications of the performance decrement and intervention findings to other instructor dependent training programs, e.g., Ranger, Airborne, Aviation, and Initial Entry Training would be beneficial. Training and operational risks could be reduced while the quality of trainer/instructor performance would be increased.

Environmentally unique research opportunities. The design and purpose of the JRTC is to provide strenuous training for the rotational unit that can not be achieved at home station. However, methods must be explored to increase the utility of JRTC observations and data if the full benefit of this facility and the justification of its resources are to be maintained. Detailed and systematic observations at the JRTC would contribute to a greater understanding of the interpersonal factors that detract from collective performance. This environment is one of the few available that provides the necessary continuous operations stressors that could, and should, be used to quantify command and staff technical and tactical contributions to combat readiness.

The theoretical components postulated as critical to battle staff integration (Olmstead, 1990), the understanding and developing measurement methodologies for critical information and staff communication requirements at battalion level (Crain, 1990; Kahan, Worley, & Stasz, 1989), and the enhancement of instructor performance (Thompson, 1989) cannot be examined as thoroughly anywhere else. The JRTC remains an important continuous operations training center, supporting low through mid intensity conflict training for light forces which must meet the primary operational challenges facing the US Army in the future. It is also the only controlled environment where a broad range of research and development issues designed to support light forces combat readiness can be validated.

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